

Homework 2 POM 500 Statistical Analysis Note: Attempt all questions as per rubric. Weightage for each problem including case study is 10 marks. The maximum you can score is 50. Use Excel functions wherever possible.

Problem-1 Using 'VehicleFailureData', summarize 'Mileage at Failure' by obtaining: a) Mean (Write Excel function)(average mean= mileage at failure b) Median (Write Excel function) (median sum mileage at failure '0c) Mode (Write Excel function) (mode=mileage at failure)d) 10th percentile (Write Excel function) e) 90th percentile (Write Excel function) f) 1 st quartile (Write Excel function) g) Total Count (Write Excel function)count if =total count h) Sum (Write Excel function)(sum=mileage ar failure i) Range (Write Excel function) j) Standard deviation (Write Excel function) dstds = mileage at failure

Problem-2 Public transportation and the automobile are two methods an employee can use to get to work each day. Samples of times recorded in minutes for each method are shown. Public Transportation 28 29 32 37 33 25 29 32 41 34 Automobile 29 31 33 32 34 30 31 32 35 33 a) Compute the sample mean time to get to work for each method. Public transportation 28 29 32 37 33 25 29 32 41 34 **Step 1** ...Add up all the numbers in the data s

$28+29+32+37+33+25+29+32+41+34=320$ 28 plus 29 plus 32 plus 37 plus 33 plus 25 plus 29 plus 32 plus 41 plus 34 equals 320

$$28+29+32+37+33+25+29+32+41+34=320$$

Step 2 ...Count the number of values in the data set.

$$10$$

Step 3 ...Divide the sum of the numbers by the number of values. $320/10=32$ 320 / 10 equals 32

$$320/10=32$$

f,34,26,28,30,35,33,25 is 29toppr.co

$28+29+32+37+33+2+41+34=320$ 28 plus 29 plus 32 plus 37 plus 33 plus 25 plus 29 plus 32 plus 41 plus 34 equals 320

$$28+29+32+37+33+25+29+32+41+34=320$$

Step 2 ...Count the number of

1010

10

Step 3 ...Divide the sum of the numbers by the number of values.

$$320/10=32$$
320 / 10 equals 32

$$320/10=32$$

The mean of the given data set is 32

$$32010 = \frac{32320}{10} \text{ end-fraction equals } 32$$

$$32010=32$$

Solution

The mean for Automobile is 32

(Write Excel function) b) Compute the Standard deviation for each method (dstds= public transportation, automobile) . (Write Excel function) c) Based on your results from parts (a) & (b), which method of transportation should be preferred? Explaining the automobile takes less time expressed in minutes.

Problem-3 Closing stock market prices for Apple and Microsoft during a week in January 2012 were as given below: (Write Excel function) Apple \$447.28 \$29.23 \$444.63 \$29.50 \$446.66 \$29.56 \$420.41 \$29.34 \$427.41 \$29.73 Calculate coefficient of variation (CV) for each company. (Write Excel function)

Add the number of values then divide the sum by the number of values in tet 374.80, . 115.89 , 102.96 , 93.08 , 91.91 82.75 79.54 71.8633.13 Calculate coefficient of variation (CV) for each company. (Write Excel function)

To calculate the coefficient of variation (CV), you need to first find the mean and standard deviation of your data set, then divide the standard deviation by the mean and multiply the result by 100; essentially, the formula is: $CV = (\text{Standard Deviation} / \text{Mean}) \times 100$.

Problem-4 Shown below are the top nine leading retailers in the United States in a recent year according to Kantar consulting. Company Revenues (\$ billions) Walmart To find the range and then the average of a data set, first identify the highest and lowest values to calculate the range (by subtracting the lowest from the highest), then add up all the values in the data set and divide that sum by the total number of values to find the average.

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then add up all the values in the data set and divide that sum by the total number of values to find the average.

Assume that the data represent a population. a) Find the mean. (Write Excel function) add the number of values then divide the sum by the number of values in the data se b) Find the range. The range in statistics for a given

data set is the difference between the highest and lowest values. For example, if the given data set is {2,5,8,10,3}, then the range will be $10 - 2 = 8$. (Write Excel function) c) Find the population variance. (Write Excel function) To find the population standard deviation, calculate the mean of the data set, then subtract the mean from each data point, square the differences, add them up, divide by the total number of data points (N), and finally take the square root of that result; the resulting value is the population standard deviation, denoted by σ (sigma).

$$\text{Formula: } \sigma = \sqrt{(\sum (x_i - \mu)^2 / N)}$$

Where:

σ = population standard deviation, \sum = summation symbol, x_i = each data point, μ = population mean, and N = total number of data points in the population.

Steps to calculate:

Find the mean (μ): Add up all the data points and divide by the total number of data points.

Calculate deviations: Subtract the mean from each data point.

Square the deviations: Square each deviation calculated in step 2.

Sum the squared deviations: Add up all the squared deviations.

Divide by N: Divide the sum of squared deviations by the total number of data points (N)

Take the square root: Take the square root of the result from step 5 to get the population standard deviation (σ).

d) Find the population standard deviation. (Write Excel function)

To find the population standard deviation, calculate the mean of the data set, then subtract the mean from each data point, square the differences, add them up, divide by the total number of data points (N), and finally take the square root of that result; the resulting value is the population standard deviation, denoted by σ (sigma).

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Case study: Business Schools of Asia-Pacific The pursuit of a higher education degree in business is now international. A survey shows that more and more Asians choose the master of business administration (MBA) degree route to corporate success. As a result, the number of applicants for MBA courses at AsiaPacific schools continues to increase. Across the region, thousands of Asians show an increasing willingness to temporarily shelve their careers and spend two years in pursuit of a theoretical business qualification. Courses in these schools are notoriously tough and include economics, banking, marketing, behavioral sciences, labor relations, decision making, strategic thinking, business law, and more. The dataset MBA Asia-Pacific shows some of the characteristics of the leading AsiaPacific business schools. Managerial Report: Use the methods of descriptive statistics to summarize the data in MBA Asia-Pacific. Discuss your findings. a) Your discussion should include a summary for each variable in the data set. Make comments and interpretations based on appropriate means and proportions. What new insights do these descriptive statistics provide concerning Asia-Pacific business schools? b) Summarize the data to compare the following: i) Any difference between local and foreign tuition costs. ii) Any difference between mean starting salaries for schools requiring and not requiring work experience. iii) Any difference between starting salaries for schools requiring and not requiring English tests. c) Do starting salaries appear to be related to tuition S

<i>Full-Time Enrollment</i>	
Mean	165.16
Standard Error	28.16823
Median	126
Mode	30
Standard Deviation	140.8411
Sample Variance	19836.22
Kurtosis	-0.75127
Skewness	0.756613
Range	451
Minimum	12
Maximum	463
Sum	4129
Count	25

<i>Students per Faculty</i>	
Mean	8.48
Standard Error	1.011797
Median	7
<i>Local Tuition (\$)</i>	
Mean	12374.92
Standard Error	1555.685
Median	11513
Mode	#N/A
Standard Deviation	7778.423
Sample Variance	60503872
Kurtosis	0.50614
Skewness	0.622248
Range	32060
Minimum	1000
Maximum	33060
Sum	309373
Count	25

Case 3: Business Schools of Asia-Pacific

1. Include a summary for each variable in the data set. Make comments and

interpretations based on maximums and minimums, as well as the appropriate means and proportions. What new insights do these descriptive statistics provide concerning Asia-Pacific business schools?

a/ Full-Time Enrollment

From the above statistics:

- + Enrollment has a mean of 165.16 units.
- + The value of Mean is greater than Median ($165.16 > 126$). This indicates that data is right-skewed. The value of skewness is 0.756613.
- + The maximum is 463 units while the minimum is 12 units.

b/ Students per Faculty

From the above statistics:

- + Students per Faculty has a mean of 8.48.
- + The value of Mean is greater than Median ($8.48 > 7$). This indicates that data is right-skewed. The value of skewness is 0.762104.
- + The maximum is 19 units while the minimum is 22 units.

c/ Local Tuition (\$)

From the above statistics: